

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
1 April 2004 (01.04.2004)

PCT

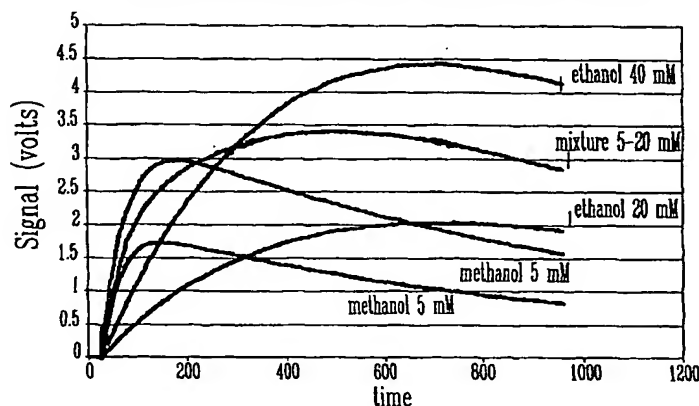
(10) International Publication Number
WO 2004/027083 A3

- (51) International Patent Classification⁷: **C12Q 1/00**, 1/26, G01N 27/327
- (21) International Application Number: PCT/CA2003/001429
- (22) International Filing Date: 19 September 2003 (19.09.2003)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 60/411,866 20 September 2002 (20.09.2002) US
- (71) Applicant (for all designated States except US): **MEDIN-NOV, INC.** [CA/CA]; 390 St-Vallier Est, Suite SS01, Quebec, Quebec G1K 3P6 (CA).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **DOUVILLE, Pierre** [CA/CA]; 2381 Ave Power, Sillery, Quebec G1T 1N8 (CA). **ROUSSEAU, François** [CA/CA]; 1006 des Chrysolithes, Charlesbourg, Quebec G2L 3C4 (CA). **FOREST, Jean-Claude** [CA/CA]; 840 Ave des Braves, Quebec, Quebec G1S 3C4 (CA).
- (54) Agents: **DUBUC, J. et al.**; Goudreau Gage Dubuc, Stock Exchange Tower, 800 Place Victoria, Suite 3400, P.O. Box 242, Montreal, Quebec, H4Z 1B9 (CA).
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:
- with international search report
 - before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

[Continued on next page]

(54) Title: AN ANALYZER FOR THE SIMULTANEOUS ENZYMATIC DETECTION OF CLOSELY RELATED ANALYTES

Examples of differential kinetic responses from alcohols



(57) Abstract: An analyzer and a method for simultaneously detecting and measuring the concentration of two related analytes, the analytes being substrates for a common enzyme. The analyzer comprises an enzymatic reaction monitoring component including a support base, a mixed electrode system consisting of a working electrode, an auxiliary electrode and a reference electrode, the mixed electrode system being supported by said support base, and an enzymatic reaction means incorporating the enzyme, the enzymatic reaction means being disposed on the mixed electrode system; whereby, when the enzymatic reaction means is placed in contact with a liquid sample containing the two related analytes, the two related analytes chemically react with the enzyme to produce an electronic signal directly related to the concentration of each of the two related analytes in said liquid sample; a detector including a sensor, the detector being connected to the enzymatic reaction monitoring component and capable of continuously detecting and amplifying said electronic signal to produce amplified signals; and a data processor capable of converting the amplified signals into numerical data representative of the concentration of each of the two related analytes.



(88) Date of publication of the international search report:
21 May 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No.

PCT 03/01429

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 C12Q1/00 C12Q1/26 G01N27/327

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 IPC 7 C12Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, MEDLINE, BIOSIS, EMBASE

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PLEGGE V ET AL: "Analysis of ternary mixtures with a single dynamic microbial sensor and chemometrics using a nonlinear multivariate calibration." ANALYTICAL CHEMISTRY. UNITED STATES 1 JUL 2000, vol. 72, no. 13, 1 July 2000 (2000-07-01), pages 2937-2942, XP002273463 ISSN: 0003-2700	1-25, 27-45
Y	the whole document page 2939, column 1, paragraph 2 page 2940 page 2941, column 1, paragraph 3 table 2 --- -/-	26

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *G* document member of the same patent family

Date of the actual completion of the international search

16 March 2004

Date of mailing of the international search report

31/03/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax (+31-70) 340-3016

Authorized officer

Jenkins, G

INTERNATIONAL SEARCH REPORT

International Application No

PCT 03/01429

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	LIDEN HELENA ET AL: "Rapid alcohol determination in plasma and urine by column liquid chromatography with biosensor detection" JOURNAL OF PHARMACEUTICAL AND BIOMEDICAL ANALYSIS, vol. 17, no. 6-7, September 1998 (1998-09), pages 1111-1128, XP002273464 ISSN: 0731-7085	1-22, 27-45
Y	the whole document figures 1,2	26
X	US 5 312 590 A (GUNASINGHAM HARI) 17 May 1994 (1994-05-17) the whole document figures 1,3,9 column 2, line 25-27 column 4, line 22-25,64-69 column 7, line 9-24	1-22, 27-45
X	EP 0 371 490 A (KANZAKI PAPER MFG CO LTD) 6 June 1990 (1990-06-06) the whole document page 4-5	1-22, 27-45
X	BACHMANN T T ET AL: "IMPROVED MULTIANALYTE DETECTION OF ORGANOPHOSPHATES AND CARBAMATES WITH DISPOSABLE MULTIELECTRODE BIOSENSORS USING RECOMBINANT MUTANTS OF DROSOPHILA ACETYLCHOLINESTERASE AND ARTIFICIAL NEURAL NETWORKS" BIOSENSORS & BIOELECTRONICS, ELSEVIER SCIENCE PUBLISHERS, BARKING, GB, vol. 15, no. 3/4, 2000, pages 193-201, XP001010317 ISSN: 0956-5663 the whole document figure 2	1-22, 27-45
X	EP 1 182 456 A (SENS INC I) 27 February 2002 (2002-02-27) the whole document figures 1-3	1-22, 27-45

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/JP03/01429

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5312590	A	17-05-1994	NONE	
EP 0371490	A	06-06-1990	JP 2079943 C	09-08-1996
			JP 2147947 A	06-06-1990
			JP 7104313 B	13-11-1995
			DE 68913446 D1	07-04-1994
			DE 68913446 T2	16-06-1994
			EP 0371490 A1	06-06-1990
			US 5320939 A	14-06-1994
EP 1182456	A	27-02-2002	KR 2002008941 A	01-02-2002
			KR 2002088521 A	29-11-2002
			CN 1334460 A	06-02-2002
			EP 1182456 A2	27-02-2002
			JP 2002090331 A	27-03-2002
			US 2002027072 A1	07-03-2002